**Utah Division of Air Quality**
**New Source Review Section**

Date: _____
Consulting Company: _____
Address: _____
_____
Telephone Number: _____
Fax Number: _____
Source Number: _____

# Form 16
# Soil/Groundwater Hydrocarbon Remediation

| **Contamination Information** | |
|---|---|
| 1. Initial location of contamination (include address): | 2. Amount of material contaminated (cubic yards or tons of material being handled): |
| 3. Specific compounds contained in hydrocarbon contamination (list each by name, relative percentage of total and volatility rate or vapor pressure:<br>_____<br>_____<br>_____ | |
| 4. Maximum concentration of hydrocarbon contamination (lb/ton or ppm)(List concentration of each individual contaminant.) | |

| **Process Information** |
|---|
| 5. Remediation will be performed: ? On location<br>? In-situ ? excavated<br>? Excavated and transported to a new location |
| 6. Type of unit/method used for remediation:<br>? Soil vapor extraction ? Biodegradation ? In-situ leaching<br>? Soil aeration (land farming) ? Asphalt Incorporation ? Groundwater stripping<br>? Excavation ? Thermal Treatment ? Other _____ |
| 7. Attach flow diagram and site plan of process: |

| **Soil Vapor Extraction** | |
|---|---|
| 8. Fan/blower requirements:<br>_____hp _____$ft^3$/min | 9. Exhaust gas flow rate:<br>Design maximum: _____acfm at _____$^oF$<br>Average expected: _____acfm at _____$^oF$ |
| 10. Heater fuel: ? electric ? propane<br>? kerosene ? other _____ | 11. Air flow control valves: ? Yes ? No |
| 12. Stack height: | 13. Stack diameter: |
| 14. Stack gas exit temperature: | 15. Expected concentration flow rate (grams/sec) |
| 16. Pressure gauges: ? Yes ? No | 17. Flow meters: ? Yes ? No |

# Soil/groundwater Hydrocarbon Remediation
# Form 16 (Continued)

| | |
|---|---|
| 18. Attach discharge monitoring plan | |
| **Biodegradation** | |
| 19. Kind of nutrients added to soil: | 20. Water flow rate:_____acfm |
| 21. Pump requirements: hp _____ft$^3$\min_____ | 22. Number of wells: _____Recovery____ Injection |
| **In-situ Leaching** | |
| 23. Surfactant used: | 24. Pump requirements: hp _____ ft$^3$\min _____ |
| 25. Leachate flow rate:<br>Design maximum: _____acfm<br>Average expected: _____acfm | 26. Number of monitoring wells |
| 27. Describe treatment of leachate: | |
| **Thermal Treatment** | |
| 28. Type of equipment: ? Rotary kiln ? Rotary drier ? Fluidized bed<br>? Low-temperature thermal stripper ? Other _____ | |
| 29. Company performing the incineration:<br>Approval Order # _____ | 30. Incineration capacity (tons/hr, etc.): |
| **Soil Aeration** | |
| 31. Site of Aeration: | 32. Dimensions of aerated layer: _____ length<br>_____ width _____ depth |
| 33. Type of soil: | 34. Method to be used to turn the soil and frequency of turning the soil. |
| **Asphalt Incorporation** | |
| 35. Company using soil in asphalt: | 36. Approval Order # _____ |
| **Groundwater Stripping** | |
| 37. Groundwater flow rate:<br>_____gals/min | 38. Type of treatment: ? Packet tower<br>? Oil/water separator ? Carbon adsorption<br>? Other _____ |
| 39. Exhaust flow rate: | 40. Stack height: |
| 41. Stack diameter: | 42. Expected concentration flow rate (grams/sec): |
| 43. Stack gas exit temperature: | 44. Attach discharge monitoring plan |

# SOIL/GROUNDWATER HYDROCARBON REMEDIATION
# FORM 16 (continued)

| Excavation |
|---|
| 45. Name of landfill being used: |

| Emission Controls |
|---|
| 46. Type of control: ? Carbon Adsorption (Form 5) ? Afterburner (Form 3) ? Condenser (Form 7)<br>? Baghouse (Form 10) ? Wet Scrubber (Form 9) ? Cover<br>? Cyclone (Form 6) ? Other _____ |

## INSTRUCTIONS

1. Indicate the location where the contamination occurred.
2. Indicate what amount of material is being handled.
3. Specify what contaminates are present in the material. List the percentage of the total contaminate each substance makes up and indicate the volatility of each substance.
4. Indicate the maximum concentration of each contaminate in pounds per ton of material contaminated.
5. Specify where and how the remediation will be preformed.
6. Specify what method of remediation will be used.
7. Attach a flow diagram and site plan to this application.
8. Indicate the horse power or the cubic feet per minute rating of the fan/blower.
9. Supply the exhaust gas flow rate at design maximum and the average expected.
10. Indicate what type of fuel will be used in the heater.
11. Indicate whether or not air flow control valves will be used.
12. State the stack height.
13. State the stack diameter.
14. Indicate the stack gas exit temperature.
15. Supply the expected concentration flow rate in grams per second.
16. Indicate whether or not pressure gauges will be used.
17. Indicate whether or not flow meters will be used.
18. Attach a plan for monitoring discharge.
19. Indicate what type of nutrients will be added to soil for biodegradation.
20. Supply the water flow rate for water biodegradation.
21. Indicate the horse power or the cubic feet per minute rating of the fan/blower.
22. Indicate the number of recovery and number of injection wells on site.
23. Indicate what surfactant is being used in the leaching process.
24. Indicate the horse power or the cubic feet per minute rating of the pump.
25. Indicate what the leachate flow rate through the system is at design maximum and average expected.
26. Supply the number of monitoring wells used.
27. Describe how the leachate will be treated after it goes through the system.
28. Indicate what type of thermal treatment equipment will be used.
29. Indicate what company will be performing the thermal treatment and what the number of their approval order is.
30. Indicate what the incineration capacity will be.
31. Indicate the location of aeration.
32. Supply the dimensions of the aerated layer.
33. Indicate what type of soil is contaminated.
34. Indicate how the soil will be turned.
35. Indicate the company using the contaminated soil in asphalt.
36. Indicate what approval order the company is operating under.
37. Flow rate of groundwater through system.

38. Type of treatment of groundwater.
39. Indicate the exhaust gas flow rate.
40. Indicate the stack height.
41. Supply the stack diameter.
42. Indicate the concentration flow rate in the exhaust gas in grams/sec.
43. Indicate the stack gas exit temperature.
44. Attach a plan for monitoring discharge.
45. Name the landfill where the excavated soil will be transported.
46. Indicate the control that will be used in the remediation. Submit the appropriate form for the control.

NOTE: Call the Division of Air Quality (DAQ) at **(801) 536-4000** if you have problems or questions when completing this form. Ask for a New Source Review engineer. We will be glad to help!

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